

CLAIMS

1. A gas generator for an inflatable occupant protection system in a motor vehicle comprising:

5 a gas canister having a pressurized gas stored therein and a rupturable seal at an end;

an elongate projectile firing barrel having a touch hole formed in a side thereof;

a quantity of propellant positioned in said projectile firing barrel and ignitable via a flame front traversing said touch hole; and

10 a projectile positioned in said barrel and movable therein upon an ignition of said propellant,

wherein the ignition of said propellant drives said projectile into said rupturable seal, allowing said pressurized gas to exit said canister for inflation of an airbag.

15 2. The gas generator of claim 1 further comprising:

a substantially cylindrical body attached to and surrounding said barrel;

an initiator assembly positioned in a side surface of said body and substantially aligned with said touch hole, said initiator operable to generate a flame front for ignition of the propellant in said barrel.

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3. The gas generator of claim 2 further comprising a quantity of propellant stored in said initiator assembly.

4. The gas generator of claim 2 further comprising a connecting member attached to
25 both of said gas canister and said cylindrical body, said connecting member having a central aperture substantially aligned with said rupturable seal.

5. The gas generator of claim 4 wherein said barrel includes a flange extending outwardly from an end thereof, said flange cooperating with said connecting member to
30 retain said projectile after rupturing said seal.

6. The gas generator of claim 5 wherein said flange is limited in engagement with said body such that said touch hole substantially aligns with the initiator assembly when the barrel is engaged with said body.

5 7. The gas generator of claim 6 wherein said flange is keyed relative to said body, thereby limiting engagement therewith to a single radial orientation.

8. The gas generator of claim 6 wherein said flange is threadedly received by said body such that a fully threaded engagement therebetween substantially aligns said touch
10 hole with said initiator.

9. A gas generator for an inflatable occupant protection system in a motor vehicle comprising:

a gas canister having a pressurized gas stored therein and a rupturable seal at a
15 discharge end;

an elongate projectile firing barrel comprising a base end with an opening oriented toward said rupturable seal;

a quantity of ignitable propellant positioned in said projectile firing barrel;

a projectile positioned in said barrel and movable therein upon ignition of said
20 propellant;

wherein upon ignition of said propellant, said projectile is driven into and ruptures said rupturable seal, thereby releasing the pressurized gas for inflation of an airbag, said projectile being retained thereafter between said base end and said discharge end.

25 10. The gas generator of claim 9 further comprising a body member positioned about said projectile firing barrel, and a connecting member connecting said gas canister and said body member, said connecting member having an inwardly extending wall with a central aperture substantially aligned with said rupturable seal.

30 11. The gas generator of claim 10 wherein:
said barrel is substantially cylindrical; and

said base end includes a substantially planar flange positioned opposite said inwardly extending wall, said projectile retained between said wall and said flange after rupturing said seal.

5 12. An occupant protection system for a motor vehicle comprising:

an inflatable restraint cushion;

a gas generator operable to supply inflation gas to said cushion, wherein said gas generator comprises:

10 a first substantially cylindrical body having a pressurized gas stored therein and a rupturable seal;

a connecting member attached to the first body and having a central aperture substantially aligned with said rupturable seal;

a second substantially cylindrical body attached to said connecting member;

15 a projectile firing barrel positioned in an interior of said second body, said barrel including a flange extending from a base end, and an opening oriented toward said rupturable seal;

a projectile movable in an interior of said barrel;

20 a propellant composition located in said barrel and ignitable to drive said projectile;

wherein upon propellant activation said projectile is driven through said barrel and into said rupturable seal, thereby liberating the contents of said first body, said projectile being retained thereafter between said flange and said connecting member.

25 13. The system of claim 12 wherein said second body includes an initiator assembly attached along a lateral side.

14. The system of claim 13 wherein said projectile firing barrel is substantially cylindrical and includes a touch hole along a lateral side and substantially aligned with
30 said initiator assembly.

15. The system of claim 12 wherein said flange comprises a plurality of radial apertures for fluidly connecting an interior of said first body with an interior of said second body upon rupturing of said rupturable seal.
- 5 16. The system of claim 12 wherein said first body includes a plurality of apertures for providing fluid communications between an interior of said first body and said inflatable restraint cushion.